



PUBLIC HEALTH STATEMENT

BIS(2-CHLOROETHYL) ETHER (BCEE)

CAS#: 111-44-4

Division of Toxicology

December 1989

This Public Health Statement is the summary chapter from the Toxicological Profile for Bis(2-chloroethyl) ether. It is one in a series of Public Health Statements about hazardous substances and their health effects. A shorter version, the ToxFQATM is also available. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present. For more information, call the ATSDR Information Center at 1-888-422-8737.

1.1 WHAT IS BCEE?

Bis(2-chloroethyl) ether (BCEE) is a colorless nonflammable liquid with a strong, unpleasant odor. It does not occur naturally, but is manufactured by humans for use in the production of pesticides and other chemicals. Limited amounts of BCEE will dissolve in water, and it also will slowly evaporate into air. In the environment, BCEE is broken down by bacteria in soil and water and by chemical reactions in the air, so it does not tend to persist for long periods.

1.2 HOW MIGHT I BE EXPOSED TO BCEE?

Exposure to BCEE is most likely to occur in or near chemical plants where it is made or used, or near waste sites where it has been improperly disposed of. One way exposure might occur is through consumption of drinking water that contains BCEE. Low levels (0.01 to 0.5 parts per billion [ppb]) of BCEE have been detected in the drinking water supplies of several cities, and higher levels (840 ppb) have been detected in underground water near

some chemical waste sites. Although BCEE evaporates relatively slowly, exposure might also occur through breathing BCEE vapors near areas where it is used or stored. However no information exists on the levels of BCEE in outdoor air.

1.3 HOW CAN BCEE ENTER AND LEAVE MY BODY?

BCEE enters the body easily after being swallowed in food or water, or after being inhaled in air. It may also enter by crossing the skin when dermal contact occurs. Once inside the body, BCEE is broken down to a number of different chemicals, and these are eliminated in the urine or the breath. Most BCEE which enters the body is removed in this way within two to three days, so BCEE does not tend to accumulate in the body.

1.4 HOW CAN BCEE AFFECT MY HEALTH?

People exposed to BCEE vapors report that it is highly irritating to the eyes and the nose. Animal studies show that BCEE vapors can cause severe injury to the lungs, and may lead to death. Mice given repeated doses of BCEE through the mouth developed liver tumors. This suggests that BCEE might cause cancer in humans, although no cases of cancer due to BCEE have been reported in people and BCEE was also not found to induce excess cancer after feeding to rats. Effects of BCEE on other organs and body functions have not been well studied, and it is not known if BCEE impairs reproduction or the development of fetuses.

DEPARTMENT of HEALTH AND HUMAN SERVICES, Public Health Service
Agency for Toxic Substances and Disease Registry



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1.5 IS THERE A MEDICAL TEST TO DETERMINE WHETHER I HAVE BEEN EXPOSED TO BCEE?

Although there are chemical tests that can identify and measure BCEE, these have not been developed for measuring BCEE in humans.

1.6 WHAT LEVELS OF EXPOSURE HAVE RESULTED IN HARMFUL HEALTH EFFECTS?

Irritation to the eye and nose has been seen in people at levels of 35 parts per million (ppm) and above of BCEE in air. In animals, lung injury and death were noted at levels of 105 ppm in air, while nose irritation occurred at levels of 35 ppm. Decreased weight gain was seen in guinea pigs and rats at levels of 69 ppm in air.

No information is available on the levels of BCEE that have caused adverse health effects when people or animals ingested the chemical.

1.7 WHAT RECOMMENDATIONS HAS THE FEDERAL GOVERNMENT MADE TO PROTECT HUMAN HEALTH?

The EPA recommends that levels in lakes and streams should be limited to 0.03 parts per billion parts of water (0.03 ppb) to prevent possible health effects from drinking water or eating fish contaminated with bis(2-chloroethyl) ether. Any release to the environment greater than 10 pounds of BCEE must be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set a limit of 15 parts per million (15 ppm) over an 8-hour workday, 40-hour workweek.

The National Institute of Occupational Safety and Health (NIOSH) recommends that workplace air should not exceed 5 ppm BCEE averaged over a 10-hour workday or 40-hour workweek. Their recommended short-term exposure limit (up to 15 minutes) is 10 ppm averaged over an 8-hour period.

The federal recommendations have been updated as of July 1999.

1.8 WHERE CAN I GET MORE INFORMATION?

If you have any more questions or concerns, please contact your community or state health or environmental quality department or:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop F-32
Atlanta, GA 30333

Information line and technical assistance:

Phone: 888-422-8737
FAX: (770)-488-4178

ATSDR can also tell you the location of occupational and environmental health clinics. These clinics specialize in recognizing, evaluating, and treating illnesses resulting from exposure to hazardous substances.

To order toxicological profiles, contact:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Phone: 800-553-6847 or 703-605-6000

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www.atsdr.cdc.gov/

Telephone: 1-888-422-8737

Fax: 770-488-4178

E-Mail: atsdric@cdc.gov